

How I Do It

Head and Neck and Plastic Surgery

A Targeted Problem and Its Solution

Management of Parotid Sialocele With Botulinum Toxin

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INTRODUCTION

Parotid sialoceles are relatively common as a complication of trauma with penetrating injury to the parotid gland or as a complication after parotidectomy. The management of parotid sialoceles has been unsatisfactory and numerous methods of treatment have been described. A case is presented of a patient who developed a sialocele after a penetrating injury to the parotid area. Initially conservative measures (percutaneous aspiration and pressure dressing) were unsuccessfully applied to manage the sialocele. More aggressive approaches were avoided by injecting botulinum toxin into the parotid gland. The present paper describes this simple and effective sialocele management technique.

CASE REPORT

An 18-year-old man reported a penetrating injury to the parotid area due to shattered glass after a motor vehicle accident. Seven days after suture of facial laceration there was pain and swelling on the right side of the jaw in the area overlying the parotid gland (Fig. 1). On examination there was a 3-cm fluctuating mass beneath the wound. Percutaneous needle aspiration of the mass yielded 40 mL of clear fluid in which the amylase level was 800,000 units/L. For 1 month aspiration was performed every 2 to 3 days, yielding between 20 and 40 mL of fluid. This treatment was associated with pressure dressing, but the swelling returned. A scopolamine patch was applied to

the skin behind the ear homolateral to the sialocele without any notable result.¹

Because of thinning of the overlying skin and because formation of an external fistula was imminent, it was decided to perform a different therapy. Lidocaine hydrochloride (1%) was injected superficially under the skin overlying the mass. The pericystic substance of the gland was then injected percutaneously with 10 mouse units of botulinum toxin F. A tuberculin syringe with a 27-gauge monopolar Teflon-coated hollow electromyographic (EMG) recording needle connected to an EMG recorder was used for the injection (Fig. 2). To prevent the masseter and pterygoideus from improperly weakening with the needle in place, the patient was instructed to open and close his mouth and the EMG signal was observed.

To prevent any unknown, long-lasting side-effects,² we injected botulinum toxin F, which shows earlier and shorter efficacy compared with botulinum toxin A, according to literature.^{3,4} Our local ethical committee approved the botulinum toxin F treatment and the patient gave his informed consent.

Botulinum toxin F was obtained from WAKO (Osaka, Japan), purified, and prepared in 0.1 mL of phosphate buffer solution containing 2% human serum albumin. Its toxicity was detected in BALB/C mice.⁵

After the treatment, the sialocele required only one 5-mL aspiration of fluid 2 days later, after which there were no further problems. No side effect was observed after the injection and the patient is still disease free 2 years after the treatment (Fig. 3).

DISCUSSION

Parotid sialoceles are a relatively common result of trauma with penetrating injury to the parotid gland or as a complication after parotidectomy or rhytidectomy.⁶⁻¹⁰

Clinically the patient has a cystic swelling in the parotid region, which develops some days after the trauma

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Fig. 1. Parotid sialoceles (white arrow).

or surgery. An inflammatory pseudocapsule limits extravasation of saliva into the neck plane, although unfortunately the sialoceles usually leads to external salivary fistula, which is more resistant to treatment.⁸⁻¹⁰ Sialoceles can be treated by pressure dressing with or without percutaneous aspiration.⁸⁻¹¹ However, if a sialocel proves resistant to this form of treatment, a more aggressive approach is necessary. Re-exploration of the wound, creation of an oral fistula, application of suction drainage, tympanic neurectomy, radiotherapy, and even parotidectomy are some of the suggested forms of treatment.⁸⁻¹² The major secretomotor fibers to the salivary gland are cholinergic parasympathetic and, therefore, oral anticholinergic drugs are considered a useful adjunct, which may temporarily lead to a decrease in salivary secretion, permitting spontaneous closure. However, they can cause distressing side effects.^{7-9,13} Botulinum toxin is produced by the bacterium *Clostridium botulinum*. Seven serologically distinct neurotoxins designated A through G are known, each with its own antigenic specificity and therapeutic profile.⁴ Botulinum toxin causes a chemical denervation by blocking neurotransmitter release at cholinergic nerve terminals; both motor nerves to skeletal muscles and cholinergic autonomic nerves are similarly blocked by

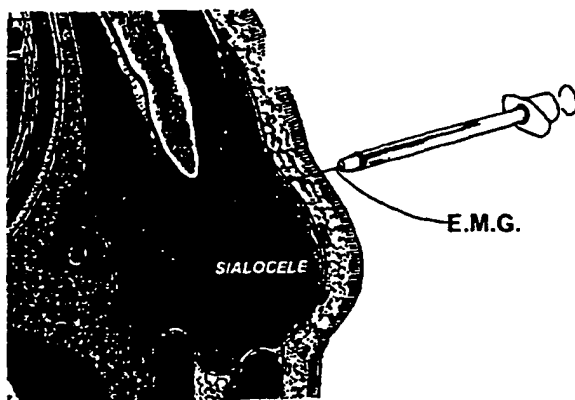


Fig. 2. Representation of treatment. EMG = electromyographic recording needle.



Fig. 3. Complete resolution of disease after botulinum toxin treatment.

the toxin. Botulinum toxin A injections are widely used in the treatment of hemifacial spasm, laryngeal dystonia, spasmodic torticollis, and other conditions characterized by muscular overactivity. More recently the use of botulinum toxin in some autonomic diseases, such as achalasia, hyperhidrosis, and Frey's syndrome have been reported.^{4,14} The major secretomotor fibers to the salivary gland are susceptible to inhibition by toxin (in botulism, dryness of the mouth is a common symptom).^{4,15} In 1997 Bushara reported the use of botulinum toxin A injection into the parotid glands in the treatment of sialorrhea, but he feared the side effects that protracted denervation would have on the parotid gland.¹⁶ Indeed, at the neuroglandular junction botulinum toxin A shows longer effects than at the neuromuscular junction (11-27 mo vs. 3-5 mo).¹⁴ We observed the same trend with botulinum toxin F injection in the treatment of Frey's syndrome compared with a neuromuscular block (3.5 mo vs. 1 mo) (Unpublished observation). Afterward, to minimize unforeseen side effects from long-lasting glandular denervation (salivary duct calculi, sialectasis, and infection),^{2,15} we decided to use botulinum toxin F. The temporary block of parotid secretion leads to a temporary decrease in salivary flow followed by glandular atrophy, thus allowing the injured gland or duct to heal and form scar tissue.

CONCLUSION

We describe a case in which a posttraumatic sialocel was successfully managed with botulinum toxin injection after conservative conventional management had failed. To our knowledge the use of botulinum toxin in the treatment of a parotid sialocel has never before been described in the literature. Localized injection of botulinum toxin into the parotid gland proved to be a safe and effective treatment of parotid sialocel. Additional study is required to establish the duration of the parotid secretion block after the botulinum toxin injection.

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